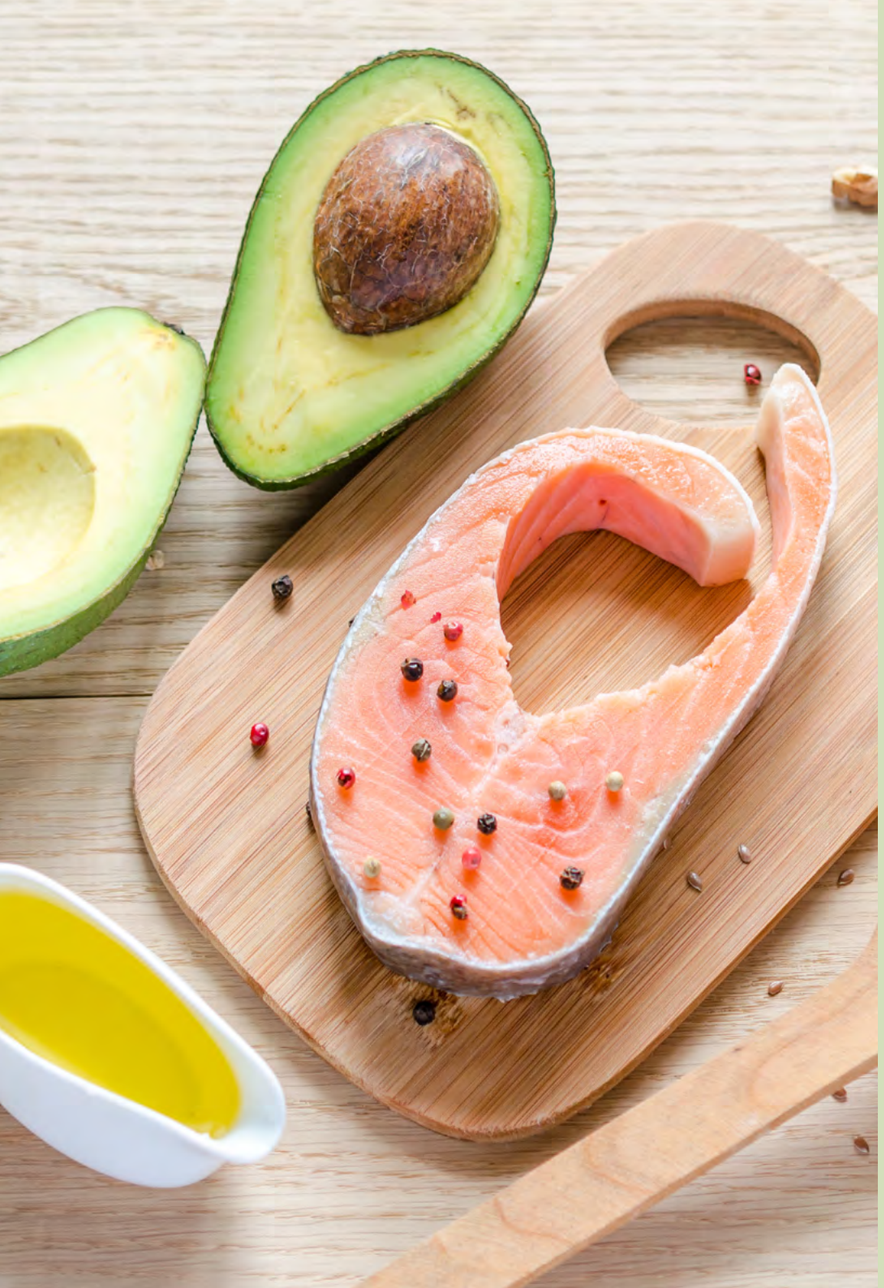
PRODUCT CATALOGUE

A COLLECTION OF PRODUCTS PRODUCED BY THE AUSTRALIAN SEAFOOD CRC FROM OUR RESEARCH, EXTENSION AND COMMERCIALISATION PROGRAMS

AUSTRALIAN SEAFOOD COOPERATIVE RESEARCH CENTRE

SAFE PACKAGED SEAFOOD

A GUIDE TO IDENTIFYING FOOD SAFETY HAZARDS AND DETERMINING THE SHELF-LIFE OF PACKAGED SEAFOOD PRODUCTS



Dear Reader,

This Product Catalogue highlights the products that have arisen as a result of Seafood CRC research and education projects from some 500+ projects undertaken by the CRC since 2007. We define products in this catalogue as being tangible "things" you can use in your business right now, today.

Each product can be sourced from a variety of locations, many of them downloadable or simply a phone call away. The locations of all products can be found at the end of the catalogue.

Happy reading!

Len Stephens

Managing Director, Australian Seafood CRC

Use this key to easily navigate to products relevant to you:

- Finfish
- Prawns
- Rocklobster
- Crabs
- Oysters
- Abalone
- Sea Cucumber
- Farmers
- Fishers
- Researchers
- Genetics
- Exporters
- Processors
- Marketers
- Retailers
- Chefs
- Consumers
- Teachers/Schools
- Higher education
- GPs/Health Professionals

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AQUACULTURE INNOVATION

Yellowtail Kingfish (YTK) *Photobacterium* vaccination protocol

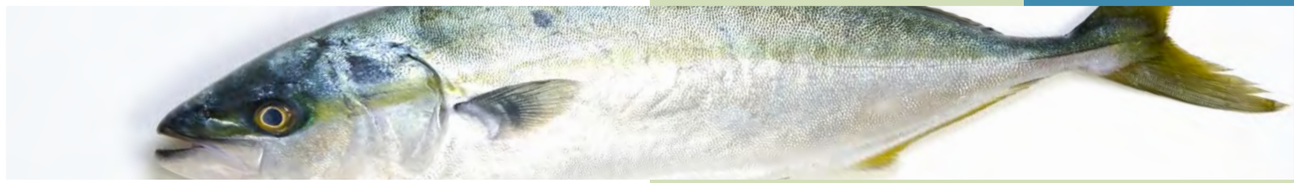
An autogenous vaccine has been developed (Allied Biotechnology, NSW) to reduce the occurrence of photobacterium infections in cultured YTK. CRC research has developed protocols for vaccinating juvenile YTK, prior to stocking out in cages. This research demonstrated that a vaccination program can reduce the infection rate and thus mortalities, in cage culture.

WHO IS IT FOR: YTK producers.

WHEN WOULD IT BE USED: When photobacterium infections are affecting production efficiency.

AVAILABILITY: Clean Seas Tuna Ltd

RELATED PROJECT: 2011/733



Procedures for transferring Yellowtail Kingfish (YTK) to sea cages

On-growing fingerlings in warmer water temperature nursery systems prior to stocking them into sea cages reduces mortality rates and increases at sea growth rates, potentially shortening the overall grow-out period and consequently, reducing the costs of YTK production. A new stocking regime and standard operating procedures manual has been developed to give managers new information on the effects of fish size and temperature on the performance of juvenile and sub-adult YTK. This will allow them to determine the most appropriate time to stock YTK into sea cages to enhance survival of YTK and increase profitability.

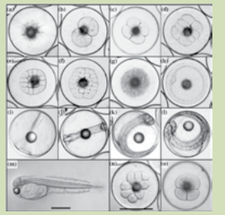
WHO IS IT FOR: YTK producers.

WHEN WOULD IT BE USED: When developing YTK production systems to ensure more consistent product quality.

AVAILABILITY: Clean Seas Tuna Ltd

RELATED PROJECTS: 2007/718, 2008/903.10, 2009/749, 2013/737

Yellowtail Kingfish (YTK) larval rearing protocols



Low survival, poor swimbladder inflation rates and a range of cranial and skeletal malformations occur in the captive breeding of YTK adding significantly to the cost of seed supply. A range of factors have been improved within larval rearing systems to improve larval survival and particularly to reduce the incidence of deformities. These factors have been integrated into revised standard operating procedures including guidelines on tank hydrodynamics, stocking densities, feeding systems, surface skimming, lighting, tank colours and live feed enrichment.

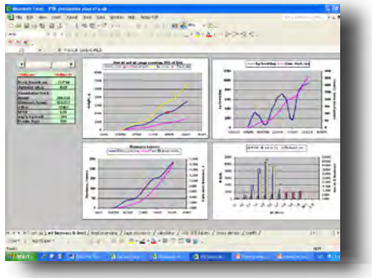
WHO IS IT FOR: YTK producers.

WHEN WOULD IT BE USED: To improve hatchery performance and supply commercial quantities of quality seed for culture.

AVAILABILITY: Clean Seas Tuna (Standard Operating Procedures) and Seafood CRC website (report)

RELATED PROJECTS: 2007/718, 2009/749,2010/753, 2011/740 and 2013/737

Yellowtail Kingfish (YTK) feed efficiency model



The cost of feed accounts for between 60% and 80% of the total cost of production of YTK, hence it is important to optimise diet formulations, and for management.

A spreadsheet model of feed efficiency was generated for judging the relative performance of year classes, sites and various test diets, regimes and feeding technologies.

WHO IS IT FOR: YTK producers.

WHEN WOULD IT BE USED: To assess feed efficiency.

AVAILABILITY: Clean Seas Tuna Ltd.

RELATED PROJECT: 2009/741

Yellowtail Kingfish harvest crew user manuals

Two user manuals to facilitate harvest crew use of the operational software ("Stun Count Manager - quick instructions") and the setup and maintenance of the stunner and bleeder units ("LT 50 Flow-Through Stunner and Bleeder Manual") have been developed. Furthermore, standard operating procedures manual was developed to promote best practice on YTK farms.

WHO IS IT FOR: YTK growers/processors.

WHEN WOULD IT BE USED: In the development of harvest strategies for YTK and in utilising existing harvesting technology.

AVAILABILITY: From the FRDC.

RELATED PROJECT: 2010/778

Southern Bluefin Tuna (SBT) breeding and larval rearing protocols

Artificial propagation of tuna from captive broodstock has been seen for many years as a means to escape the constraints to tuna aquaculture imposed by quota on wild caught tuna. Provision of a reliable and cost effective supply of captive bred juveniles could support a major expansion in tuna farming in Australia. CRC research has developed protocols for induced spawning of tank held SBT broodstock and the rearing of (to date non-commercial numbers) larvae.

WHO IS IT FOR: Tuna farming industry.

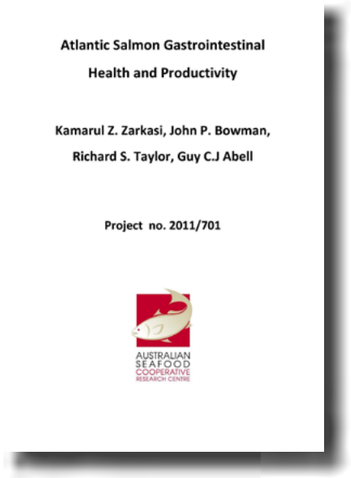
WHEN WOULD IT BE USED: To initiate pilot or commercial scale culture of captive bred SBT.

AVAILABILITY: Clean Seas Tuna Ltd. and Seafood CRC website.

RELATED PROJECTS: 2007/707, 2007/717, 2009/726, 2013/710, 2013/737

Atlantic Salmon gastrointestinal health and productivity

The project was fundamentally designed to assess and find solutions for "Summer Gut Syndrome" (SGS) in Tasmanian Atlantic Salmon. The focus of the study was to better understand Atlantic Salmon gastrointestinal (GI) microbiology and to connect this data to growth performance, diet formulations and in-farm processes for rapidly assessing salmon with low appetite. As a result of this project, the following databases have been compiled that aid in the understanding of Tasmanian Atlantic Salmon gastrointestinal health:


Atlantic Salmon Gastrointestinal
Health and Productivity
Kamarul Z. Zarkasi, John P. Bowman,
Richard S. Taylor, Guy C.J Abell
Project no. 2011/701
AUSTRALIAN SEAFOOD COOPERATIVE RESEARCH CENTRE

- A database of sequences describing the composition of salmon faeces from the Tassal farm survey and from the diet study survey
- A database of farm factors (fish weight, water temperature, diets used, specific growth rates, condition factors, faecal scores) in relation to community structure analysis above
- A database of Automated Ribosomal Intergenic Spacer Region (ARISA) profiles and sequences derived from the development of an in-vitro gut model system

WHO IS IT FOR: Tasmanian Atlantic Salmon producers seeking an understanding of gut microbiology, particularly in relation to SGS.

WHEN WOULD IT BE USED: During commercial production of Atlantic Salmon.

AVAILABILITY: University of Tasmania.

RELATED PROJECT: 2011/701

What's Hatching videos and webinars

This project was a continuation of the Aquaculture Innovation Hub (Project 2008/902). The Phase II Hub focused on research extension activities in the finfish, crustacean and shellfish sectors and on increasing trans-Tasman communications among aquaculture producers and researchers.

The What's Hatching series of aquaculture video news updates were produced and launched on YouTube and distributed to over 640 Seafood CRC stakeholders providing research updates and descriptions of extension activities

A webinar by Dr Nicki Masur (Charles Sturt University and ENVision Environmental Consulting) was hosted covering the social acceptability of the fishing industry with relevance to aquaculture and the video of this webinar will be made available on the Seafood CRC website

WHO IS IT FOR: Aquaculture producers and researchers in Australia and New Zealand

WHEN WOULD IT BE USED: When seeking information and methods for effective communication within the aquaculture sector and to discover the latest aquaculture research results

AVAILABILITY: The Seafood CRC YouTube channel and the Seafood CRC website

RELATED PROJECT: 2012/756

Oyster ice machine and designs

Cold-shock, through immersion of oysters in chilled hypersaline baths, is a new technique that has the potential to effectively control a range of pest species without adverse effect on the host oysters and represents a much lower risk and more effective option compared to heat baths which are the current industry standard. Most notably, hypersaline cold-shock can be used to control subsequent natural oyster settlement known as "over-catch". A commercial scale barge mounted cold-shock bath for on lease treatment of oysters in baskets was constructed to provide test efficiency and for proof of concept of cold shock treatment for over-catch control. Designs for the prototype system are available for adaptation and modification.

WHO IS IT FOR: Oyster growers.

WHEN WOULD IT BE USED: When experiencing outbreaks of over catch and biofouling.

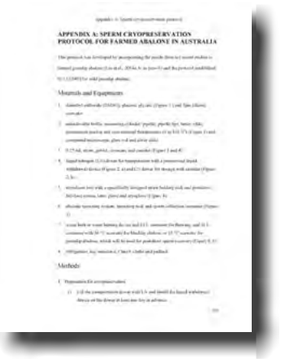
AVAILABILITY: Prototype machine and/or designs available from Marine Culture.

RELATED PROJECT: 2010/734

Left to right: A custom built punt suitable for putting the machine to sea with a power generator. Commercial scale hypersaline coldshock bath comprising an insulated tank with a variable speed conveyor belt passing from one end to the other. The immersion quick freeze unit.

Sperm cryopreservation protocol for farmed abalone in Australia

Genetic improvement programs for farmed abalone face difficulties due to: (1) asynchronous spawning in males and females within and between species; (2) the short spawning window period in a breeding season; and (3) risks associated with keeping superior broodstock alive and healthy. Sperm cryopreservation is a technique that can overcome many of these issues. Therefore, this project focused on understanding factors that influence the success of sperm cryopreservation, and developed a sperm cryopreservation protocol for farmed abalone in Australia.


APPENDIX A: SPERM CRYOPRESERVATION PROTOCOL FOR FARMED ABALONE IN AUSTRALIA

WHO IS IT FOR: Abalone farmers looking to implement and improve genetic management programs.

WHEN WOULD IT BE USED: During spawning of farmed abalone.

AVAILABILITY: SARDI.

RELATED PROJECT: 2010/755

Oyster production benchmarking system

Benchmarking within an aquaculture sector enables producers to compare the production and economic performance of their operations with industry averages and ranges and identify points of weakness and opportunities to improve the economic performance of their opportunities. CRC research developed and implemented a production performance benchmarking system which has been commercialised as a service to industry members. Farmers can apply to have their farms benchmarked anonymously (on a biennial basis) and are entitled to receive full reports on national benchmarks across the industry. The benchmarking also permits the production of an 'annual report' on trends within the industry.

WHO IS IT FOR: Oyster farmers and Oysters Australia.

WHEN WOULD IT BE USED: Farmers wish to benchmark their production operations.

AVAILABILITY: Rural Directions Pty Ltd. or contact Oysters Australia

RELATED PROJECT: 2009/701

Database of prawn colour measurements for more than 2000 individuals

Consistent, deep red coloured cooked prawns are highly sought after in the Australian market and accordingly fetch premium market prices. Farmed crustacean species commonly have suboptimal colour consistency and/or colour intensity. CRC research deveoped a database of prawn colour measurements for more than 2000 individuals and the degree of colour variation quantified across these individuals.

WHO IS IT FOR: Prawn farmers.

WHEN WOULD IT BE USED: When researching prawn colour.

AVAILABILITY: CSIRO

RELATED PROJECT: 2011/731

A series of pre-harvest recommendations for optimising prawn colour

Based on CRC research findings into the quantification of the colour of uncooked and cooked prawns, a series of pre-harvest recommendations have been developed to optimise colour in farmed prawns in the cooked product and in storage.

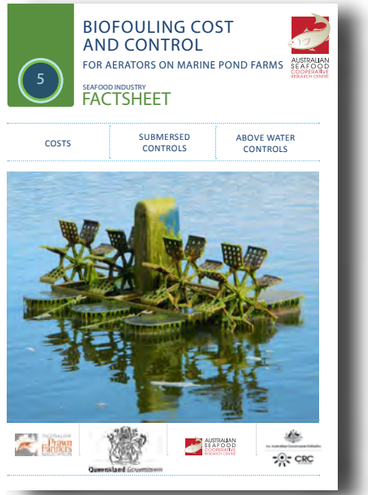
WHO IS IT FOR: Prawn farmers.

WHEN WOULD IT BE USED: When farming and harvesting prawns.

AVAILABILITY: CSIRO

RELATED PROJECT: 2011/731

Improved aerator performance on prawn farms



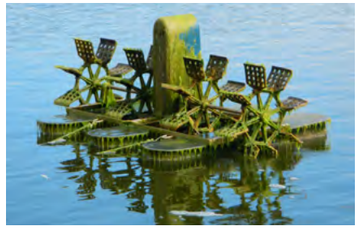
The available report and factsheet review biofouling control options for prawn farm aerators and provides clear information on the benefits, practicality and costs of biofouling control. It identifies non-toxic biofouling control options that are suitable for farm implementation and provides new information key to improving the efficiency of aeration management strategies conveyed to prawn farms.

WHO IS IT FOR: Prawn farmers.

WHEN WOULD IT BE USED: To makes informed decisions on efficient aerator management.

AVAILABILITY: Seafood CRC website, QDAF and Australian Prawn Farmers' Association.

RELATED PROJECT: 2011/734



The Prawn Farmers Biofloc Club and Algae Directory

Low water exchange or discharge systems rely on microbes to recycle the nutrients from the waste that is generated in a pond, which form small clumps commonly termed bioflocs. Prawns thrive in well managed biofloc environments, exhibiting increased survival and growth rates and farmers can reduce water usage and discharge as a result. Successful application of bioflocs results in increased farm profitability. A Biofloc club was formed for prawn farms wanting to implement biofloc within their production systems. Training materials including an algal database, webinars and other support systems are available.

WHO IS IT FOR: Prawn farmers

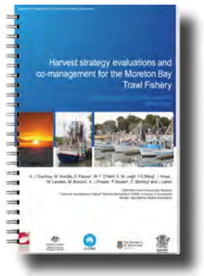
WHEN WOULD IT BE USED: When implementing biofloc on farms

AVAILABILITY: Australia Prawn Farmers Association

RELATED PROJECTS: 2007/224, 2010/745 and 2012/729

FUTURE HARVEST

Bioeconomic models



Computer based models have been developed for a range of our important invertebrate fisheries including prawns (Moreton Bay), Southern Rocklobsters (Tasmania and South Australia), Western Rocklobsters (Western Australia) and abalone (Tasmania). As a result of CRC research these models have been enhanced and applied to specific fisheries to model and identify potential modifications to fisheries management and particularly to harvest strategies that can improve the economic performance of these fisheries.

WHO IS IT FOR: Fishing industry associations, fisheries managers and researchers

WHEN WOULD IT BE USED: In setting decision rules when industries and/or regulators wish to consider changes to fishing regulations and/or harvest strategies.

AVAILABILITY:

- Moreton Bay Prawn Fishery Model: Queensland Departmnet of Agriculture, Forestry and Fisheries
- Southern Rocklobster: University of Tasmania and South Australian Research & Development Institute
- Western Rocklobster: Department of Fisheries, Western Australia
- Abalone: University of Tasmania

RELATED PROJECTS: 2006/220, 2009/714.10, 2009/714.20, 2009/714.30, 2009/774

Commercial model for rocklobster translocation

Bioeconomic models identified the translocation of low value lobsters from deep water to more productive shallow water fisheries as a potentially profitable strategy. Commercially applicable protocols for translocation were developed in Tasmania and pilot scale translocation demonstrated positive economic returns.

WHO IS IT FOR: Rocklobster fishers.

WHEN WOULD IT BE USED: When opportunities exist to improve economic yields in rocklobster fisheries through translocation.

AVAILABILITY: Attend a Future Harvest Master Class (University of Tasmania) or contact the Department of Fisheries in your state.

RELATED PROJECTS: 2006/220, 2011/744

Protocols for commercial scale hatchery production of juvenile sandfish (Sea Cucumbers)

Sea Cucumber, particularly the Sandfish (*Holothuria scabra*) represent a high value fishery product with a large and growing export market. There is significant opportunity to expand production through ranching and aquaculture. CRC research has developed hatchery techniques to enable the commercial scale production of sandfish.

WHO IS IT FOR: Sea Cucumber fishing industry and pond aquaculture operators.

WHEN WOULD IT BE USED: To initiate pilot or commercial scale culture or ranching of captive bred Sandfish.

AVAILABILITY: Darwin Aquaculture Centre and Tasmanian Seafoods.

RELATED PROJECT: 2009/744

Newly designed Western Rocklobster trap

An improved trap design for rocklobster fishermen has been proven to be more efficient in catching Rocklobsters, and improving catch per unit effort, with the potential to increase the catch by 50%. It also catches fewer under sized lobsters.

WHO IS IT FOR: Rocklobster fishermen.

WHEN WOULD IT BE USED: To become more efficient in catching lobsters to improve catch per unit effort, where input controls do not restrict pot design.

AVAILABILITY: Design available from the West Australian Fishing Industry Council.

RELATED PROJECT: 2008/900

From left to right: Broad based pot minus battens to demonstrate the neck configuration; battens removed to show the entrance arrangement.

Commercially viable stock enhancement system for abalone

Research in Western Australia has demonstrated that economic yields from Greenlip Abalone fisheries can be enhanced by stocking of hatchery produced juveniles to supplement. A bioeconomic model has been developed to estimate economic returns from enhancements and specific release protocols have been developed to effectively introduce hatchery reared juveniles into the appropriate habitat within the fishery. A risk assessment was carried out to analyse the biosecurity risks of enhancement.

WHO IS IT FOR: Abalone fishers and abalone hatcheries.

WHEN WOULD IT BE USED: In abalone fisheries where standing stock is below the holding capacity of the habitat, where biosecurity risks can be effectively managed and where fishers are open to change.

AVAILABILITY: Department of Fisheries, Western Australia

RELATED PROJECT: 2009/711

Harvest strategies to reduce stress and retain value in wild harvested abalone

Harvesting, handling, boat and land transportation and live holding can all be sources of stress for abalone destined for the live market. This stress can impact negatively on the quality of the final product. CRC research has analysed the impact of existing strategies and formulated recommendations for handling protocols and systems which minimise stress and thus improve product quality.

WHO IS IT FOR: Abalone fishermen.

WHEN WOULD IT BE USED: To improve product quality in fisheries which utilise live handling and hauling of abalone.

AVAILABILITY: University of Tasmania.

RELATED PROJECT: 2010/704

Sea Cucumber ranching systems

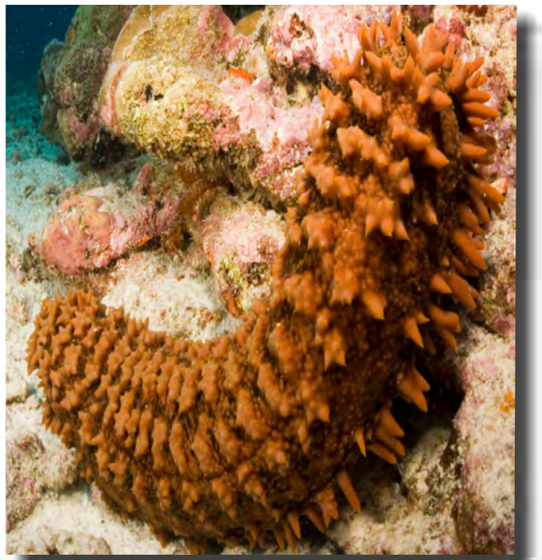
Research in Northern Territories has demonstrated that ranching of hatchery produced Sea Cucumbers (specifically the Sandfish *Holothuria scabra)* is feasible and economically viable. Protocols for release of sea juvenile Sea Cucumbers have been developed along with harvest strategies and commercialisation options. A pilot scale ranching operation is underway in Groote Eylandt. A bioeconomic model has been applied to estimate economic returns from ranching.

WHO IS IT FOR: Owners of access rights to harvest sea cucumbers.

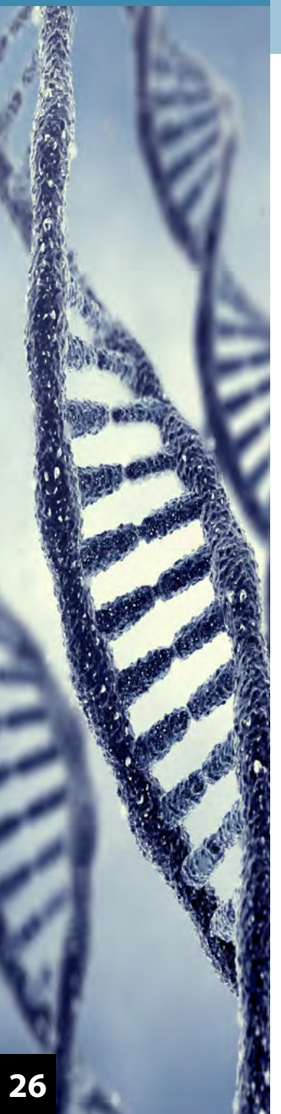
WHEN WOULD IT BE USED: In Sea Cucumber fisheries where standing stock is below the holding capacity of the habitat.

AVAILABILITY: Tasmanian Seafoods Pty Ltd.

RELATED PROJECT: 2009/744



BREEDING FOR PROFIT



TECHNIQUES AND TOOLS

Technical manuals for mass selection of Sydney Rock Oysters

NSW Department of Primary Industries - Fisheries Research Report Series 13
Manual for mass selection of Sydney rock oysters for fast growth and disease resistance
NSW DEPARTMENT OF PRIMARY INDUSTRIES

In order to protect the Sydney Rock Oyster (SRO) industry from further losses from QX disease and to improve production performance of single spat oysters, a fast growing disease resistant strain of SRO was developed. This manual describes the methodology used in the mass selection program for the SRO including details such as the role of cryopreservation. This manual was prepared to assist with the development of an industry management and commercialisation plan for the Sydney Rock Oyster breeding program.

WHO IS IT FOR: Select Oyster Company Pty Ltd and SRO hatchery producers.

WHEN WOULD IT BE USED: When developing, designing and implementing a successful breeding program.

AVAILABILITY: Through NSW Department of Primary Industries.

RELATED PROJECT: 2005/209

Hatchery manuals for Sydney Rock Oysters (SRO)

Two hatchery manuals have been produced. One details the baseline hatchery practices used for captive breeding of SRO, which are technically more complex to breed than Pacific Oysters. The second manual details the specific procedures that need to be applied in a genetic breeding program (for mass selection or production of single families).

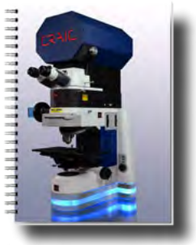
WHO IS IT FOR: Select Oyster Company Pty Ltd and SRO hatchery producers.

WHEN WOULD IT BE USED: When breeding SRO and when developing, implementing and commercialising a Sydney Rock Oyster breeding program.

AVAILABILITY: Through NSW Department of Primary Industries.

RELATED PROJECTS: 2005/209 and 2006/226

Protocol for NIRS for assessing product quality/condition in oysters



Near infrared reflectance spectroscopy (NIRS) is a rapid, objective technique which has been successfully used to discriminate quality and to estimate chemical constituents associated with quality in a variety of meat and seafood products. A NIRS protocol for quantifying condition of oysters was developed, offering a cost-effective technique alternative to an otherwise complicated compositional analysis.

WHO IS IT FOR: Anyone doing work on oyster quality and condition.

WHEN WOULD IT BE USED: When quantifying condition, for example as a trait in a breeding program.

AVAILABILITY: CSIRO.

RELATED PROJECT: 2009/754

Tool to estimate economic weights of Pacific Oysters

A spread sheet tool to estimate economic weights of Pacific Oysters.

WHO IS IT FOR: Australian Seafood Industries.

WHEN WOULD IT BE USED: When reviewing a breeding program to make sure it is focused on maximum economic gain.

AVAILABILITY: Via Australian Seafood Industries Pty Ltd.

RELATED PROJECT: 2006/227

Hatchery specifications manual

Hatchery specifications describe the equipment and husbandry techniques used to produce pedigreed families for a breeding program. It identifies problems encountered, system constraints and the development of new technologies.

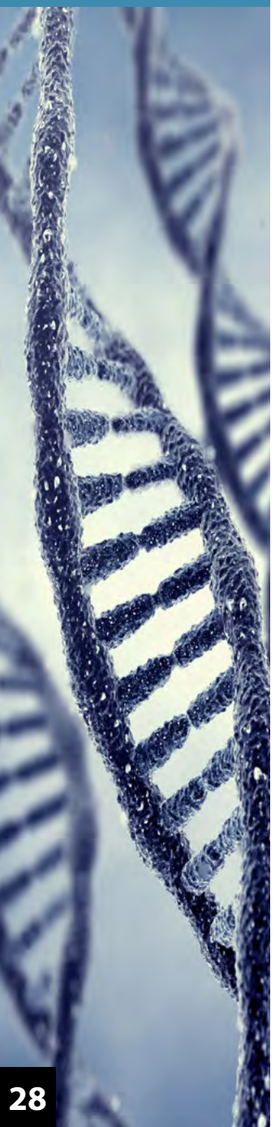
WHO IS IT FOR: Australian Seafood Industries.

WHEN WOULD IT BE USED: When breeding selective oysters (annually), to enable the implementation of a comprehensive breeding strategy.

AVAILABILITY: Via Australian Seafood Industries Pty Ltd.

RELATED PROJECT: 2006/227

BREEDING FOR PROFIT



Pacific Oyster genetic database and evaluation system

The Australian national Pacific Oyster selective breeding program developed a number of products to enable a breeding strategy to be efficiently implemented. A comprehensive SQL database and evaluation system (genetic software) was produced for implementing a breeding program to manage and manipulate data to maximise efficiency of a selection program

WHO IS IT FOR: Australian Seafood Industries.

WHEN WOULD IT BE USED: When implementing a breeding program.

AVAILABILITY: CSIRO.

RELATED PROJECT: 2006/227

Finfish genetic management databases

Breeding programs for any species are invariably data rich and it is essential individual fish and phenotype data are effectively managed through a database. Basic databases have been developed to provide baseline genetic management for the initiation of breeding programs in both Barramundi and Yellowtail Kingfish.

WHO IS IT FOR: Finfish hatcheries.

WHEN WOULD IT BE USED: When attempting genetic management and initial improvement of broodstock.

AVAILABILITY: Barramundi (Flinders University), Yellowtail Kingfish (University of the Sunshine Coast and Clean Seas Tuna Ltd or Flinders University).

RELATED PROJECTS: 2009/730, 2010/768, 2011/754, 2013/700

Apparatus and protocol for induction of triploidy in prawns

Triploid induction is the only methodology that has been trialled experimentally that shows promise for genetic protection in prawns. The substantial data and knowledge resulting from the R&D into Giant Tiger Prawn triploid induction is available for consideration by commercial hatcheries for commercial scale optimisation. The protocol and apparatus are available to any Australian industry partner interested in trialling it at their hatchery.

WHO IS IT FOR: Prawn hatcheries with genetically improved animals.

WHEN WOULD IT BE USED: When wanting to triploidise improved prawns.

AVAILABILITY: CSIRO (apparatus), Seafood CRC website (report).

RELATED PROJECT: 2008/757

Review of available genetics software for aquaculture and associated database

Review of available software tools that can be used to support selective breeding programs in the Seafood CRC
CRC
Nofima

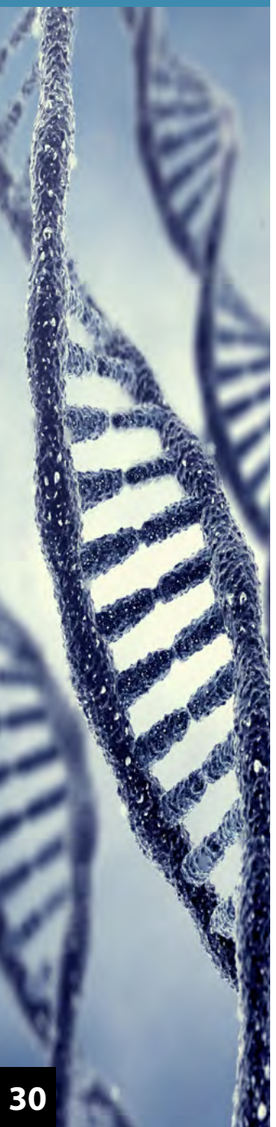
This review gives an overview of the software options that are currently available, being utilised or of potential use for a range of applications in selective breeding programs in aquaculture, mainly around data management. A MS-Access database has been created to collate, store and report on the information that has been collected and summarises the genetic software tools available in 2010.

WHO IS IT FOR: Industry running genetic breeding programs.

WHEN WOULD IT BE USED: During development of a breeding program to enhance knowledge on the availability, and assist in the correct selection, of genetics tools.

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2008/704



Report on commercialisation options for Australian aquaculture breeding programs

The CRC commissioned a review of commercialisation options from Dr. Morten Rye of Akvaforsk Fish Genetics Centre in Norway. Dr Rye's report critically reviewed commercialisation options for oyster and Barramundi breeding programs but also touched on issues around prawn breeding programs. The report has been used as a basis for revised and more sustainable commercialisation models for Australian oyster breeding programs.

WHO IS IT FOR: Aquaculture industry initiating or running aquaculture genetic breeding programs.

WHEN WOULD IT BE USED: During development and evolution of a breeding program to inform development of commercialisation options.

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2008/769

Report on scope for a nationally unified abalone breeding program

Scope and economic analysis of options for a nationally unified breeding program that provides significant economic benefit to the Australian abalone industry
FINAL REPORT
Project No. 2008/722

This scoping study provided the blueprints for a nationally unified breeding program, and enables the abalone industry to get background information, analysis and recommendations on a farmed abalone breeding program.

WHO IS IT FOR: Australian Abalone Growers Association members.

WHEN WOULD IT BE USED: Prior to a workshop to discuss a collaborative industry abalone breeding program.

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2008/722

Review of cryobanking requirement and service provision options in Australian aquaculture

The report describes the requirements and recommended strategies for establishing cryobanking services in Australia. It includes a review of published protocols for cryopreservation in a number of key species.

WHO IS IT FOR: New genetic services entities, aquaculture breeding programs and international and domestic cyrobanking service providers.

WHEN WOULD IT BE USED: When establishing a cryobanking service .

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2008/773

Benefit cost analysis of marker assisted selection

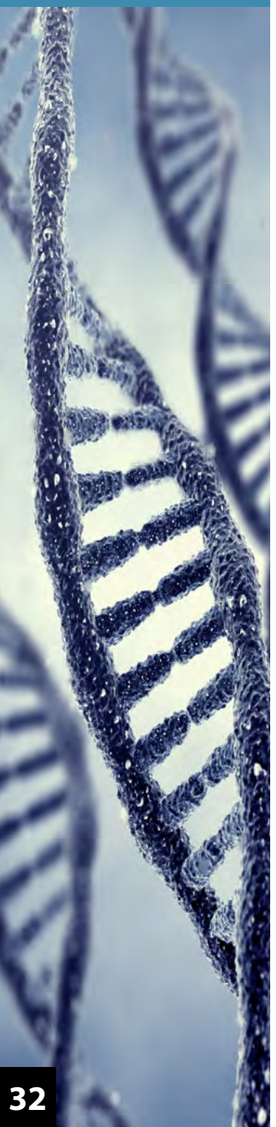
This report estimates some of the costs and likely benefits involved in developing and applying marker assisted selection; and explores which factors are likely to affect the success of the development and application of marker assisted selection.

WHO IS IT FOR: Industry and researchers developing and managing a genetic improvement program.

WHEN WOULD IT BE USED: When developing a genetic improvement program

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2008/904



Genetic markers for pedigree analysis in aquaculture species

Microsatellite markers are being increasingly used as tools for parentage assignment in aquaculture breeding programs. A range of CRC projects have developed suites of microsatellite markers that have proven successful in assigning progeny to parents. These tools are useful in analysing and optimising the management of genetic diversity within limited broodstock pools and in identifying specific genotypes during selection programs or performance evaluations. These marker systems have been developed for Yellowtail Kingfish, Southern Bluefin Tuna, Cobia and Sea Cucumber (sandfish).

WHO IS IT FOR: Researchers and hatcheries developing and implementing breeding programs for the species.

WHEN WOULD IT BE USED: When determining which broodstock have spawned and identifying parental contributions and pedigrees in F1 and subsequent generations within a hatchery.

AVAILABILITY: Univeristy of the Sunshine Coast (Southern Bluefin Tuna, Yellowtail Kingfish and Cobia); Flinders University (YTK and Sea Cucumber).

RELATED PROJECT: 2008/773

Knowledge of population structure of wild Sea Cucumber in the Northern Territory

A report detailing the population structure of wild Sea Cucumber (the sandfish *Holothuria scabra*) in the Northern Territory to be used in stock enhancement activities to ensure progeny from broodstock taken from one wild genetic stock are released into areas where the same genetic stock exist. This knowledge has been integrated into a genetic management strategy which will be critical to stock management and breeding in a hatchery and to obtaining regulatory approval for commercial scale ranching in the Northern Territory.

WHO IS IT FOR: Department of Fisheries, NT and Tasmanian Seafoods.

WHEN WOULD IT BE USED: Managing stock in a Sea Cucumber hatchery and when applying for or issuing a license to ranch Sea Cucumber.

AVAILABILITY: Flinders University; Seafood CRC website.

RELATED PROJECT: 2008/733

Genetic test to discriminate imported Asian and Australian Barramundi

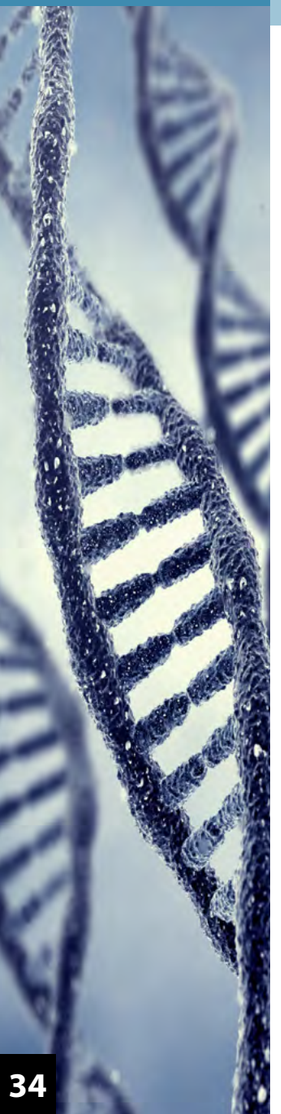
A reliable genetic test that can be used to allow the discrimination of imported Barramundi from Australian product was developed. Such a test could be used as a tool in the enforcement of Australian Food Standard 1.2.11, which sets out the requirement that packaged and preserved fish product be labelled with the country or countries of origin of the fish, or with a statement indicating that the fish is a mix of local and imported food.

WHO IS IT FOR: For anyone who wants to identify imports or product substitution.

WHEN WOULD IT BE USED: When there is suspicion of imports or product substitution.

AVAILABILITY: James Cook University.

RELATED PROJECT: 2008/758



IMPROVED BREEDS

Strategy and commercial entity for national breeding program in Barramundi

This report identifies and prioritises the research and development steps that need to be taken to establish a sound program for genetic improvement of Barramundi farmed in Australia. It identifies and describes breeding programs best suited to efficiently delivering genetic gains across the industry and characterises the genetic diversity present in captive and wild stocks (including a database of stocks available in late 2013). A simulation model has been used to predict the performance and benefit cost ratio of the selective breeding program and a business case is presented. A company, Barratek Pty Ltd, has been established to commercialise the program.

WHO IS IT FOR: Australian Barramundi Farmers Association members.

WHEN WOULD IT BE USED: When planning and initiating a national breeding program to improve Barramundi.

AVAILABILITY: Seafood CRC website, Australian Barramundi Farmers Association.

RELATED PROJECTS: 2008/758, 2009/730, 2010/725

Improved Pacific Oysters

CRC research has resulted in and expanded family selection program for Pacific Oysters (with up to 80 families per generation) which have improved growth rate and condition compared to unselected controls. The program is developing an oyster that will be resistant to Pacific Oyster Mortality Syndrome (POMS). An improved commercialisation model has been developed to ensure a sustainable supply of improved oyster to industry and to generate greater uptake by farmers.

WHO IS IT FOR: Pacific Oyster farmers (members of Oysters Australia).

WHEN WOULD IT BE USED: When farmers are seeking improved oyster performance.

AVAILABILITY: Australian Seafood Industries Pty Ltd and partner hatcheries.

RELATED PROJECTS: 2006/227, 2008/775, 2009/743, 2012/760, 2012/773

Improved Sydney Rock Oyster (SoCo)

Mass selection has been used to develop a line of SRO selected for improved growth and resistance to QX disease when compared to unselected wild stocks. This mass selected line is commercially available through a breeding program (SoCo). A more advanced family breeding program has been developed with up to 60 families selected at each generation. This program should deliver even greater genetic gains in key production performance characteristics including growth and harvest condition compared to the mass selection program.

WHO IS IT FOR: Sydney Rock Oyster growers.

WHEN WOULD IT BE USED: When farmers are willing to use single seed oysters from hatcheries and are seeking improved oyster performance.

AVAILABILITY: Select Oyster Company Pty Ltd and NSW Department of Primary Industries.

RELATED PROJECTS: 2003/209, 2005/209 and 2006/226, 2009/743, 2010/725, 2013/709

Improved Banana Prawns

CRC research has resulted in an improved selection program for Banana Prawn (*F. merguiensis)* in which inbreeding is effectively controlled. Banana Prawns are currently produced by only one farm in Australia. Guidelines have also been developed for genetic management and improvement of prawns for Australian farms.

WHO IS IT FOR: Prawn farmers wanting to an alternative to Giant Tiger Prawns (*P. monodon*) or to diversify their production.

WHEN WOULD IT BE USED: When farmers are seeking to produce an alternative to *P. monodon.*

AVAILABILITY: Seafarm Pty Ltd.

RELATED PROJECT: 2009/724

Improved Yellowtail Kingfish (YTK)

YTK seed has traditionally be obtained from spawning of wild caught broodstock. CRC research has supported a domestication program resulting in production stock being derived from F1 captive bred broodstock exploiting the benefits of domestication selection. A basic selection program is now underway for YTK.

WHO IS IT FOR: YTK producers.

WHEN WOULD IT BE USED: When seeking improved performance of YTK in production.

AVAILABILITY: Clean Seas Tuna Ltd.

RELATED PROJECTS: 2008/723, 2010/768, 2013/700

SafeFish and Trade

SafeFish technical reports

SafeFish is a partnership of seafood experts that assist the industry to resolve technical trade impediments, especially in relation to food safety and hygiene. SafeFish provides rapid technical response to maintain free and fair access to key markets and underpins the safety and hygiene of seafood sold commercially. It does this by bringing together experts in food safety and hygiene to work with the industry and regulators to agree and prioritise technical issues impacting on free and fair market access for Australian seafood. Reports available include:

- Food safety risks associated with prawns consumed in Australia
- Hazards in seafood
- Semi-quantitative risk assessment of harmful parasites in Australian finfish
- Risk assessment of paralytic shellfish toxins (PSTs) in canned Australian abalone
- Risk assessment of sulphites in canned abalone
- Uptake and elimination of PSTs from abalone
- Rocklobster exposure assessment
- Marine toxin regulatory levels
- Viruses in bivalve shellfish
- Improving the management of the risk of human enteric viruses in shellfish at harvest
- Uptake, distribution and depuration of paralytic shellfish toxins in Australian Greenlip Abalone
- Semi-quantitative risk assessment of paralytic shellfish toxins in canned Australian Abalone
- Scientific options for management of paralytic shellfish toxins potentially present in wild caught Australian Abalone
- Review of marine biotoxins in shellfish
- Report on physical and biochemical methods for analysis for fish as food.

WHO IS IT FOR: Whole industry and government.

WHEN WOULD IT BE USED: To enable rapid response to sustain free and fair access to key markets.

AVAILABILITY: SafeFish website.

RELATED PROJECT: 2008/729

"Seafood Trade Matters" newsletter

A e-newsletter with the latest information and updates on SafeFish, including food safety issues and latest trade news.

WHO IS IT FOR: Whole industry and government.

WHEN WOULD IT BE USED: To enable rapid response to sustain free and fair access to key markets.

AVAILABILITY: SafeFish website.

RELATED PROJECT: 2008/729

SAFEFISH AND TRADE

Seafood trade and market access portal

The Seafood Trade and Market Access Portal is an online, searchable database that provides information on residue and contaminant standards, microbiological standards, preservative standards, tariff and import duties, export certification requirements, rejection and detention notification reports, and trade volume statistics. The database (which underpins the portal) includes tariff and non-tariff requirements (maximum residue limits, micro limits) for Australia and major export destinations.

WHO IS IT FOR: Seafood business wanting to trade their product, particularly exporters but domestic information is also included.

WHEN WOULD IT BE USED: To check latest requirements, standards and destinations for market and as part of market development strategies. The portal enables you to consider the requirements for your product particularly market combinations . You can also review previous detentions for Australian seafood products.

AVAILABILITY: SafeFish website.

RELATED PROJECT: 2008/906

Seafood trade advisory group (STAG)

The Seafood Trade Advisory Group was initially formed to investigate and address the complex trade and market access issues facing the Australian Wild Abalone and Rock Lobster industry. The group, consisting of industry professionals and consultants, now works for the broader seafood industry to support intergovernmental negotiations concerning the export of seafood products and is committed to working through technical barriers to secure and grow free and fair access to key markets.

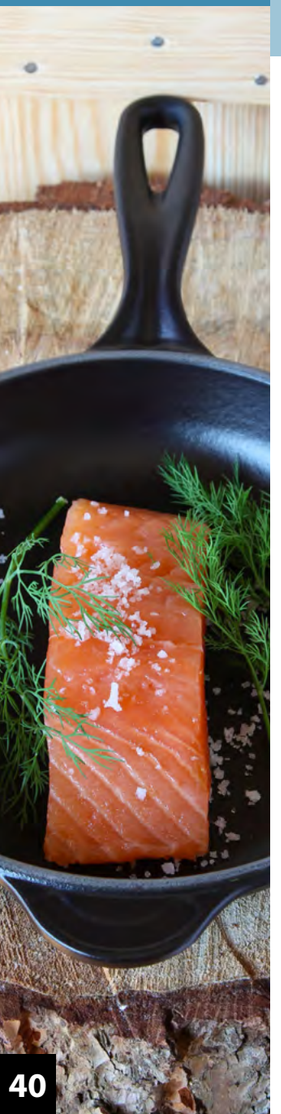
WHO IS IT FOR: Seafood producers, exporters and government organisations.

WHEN WOULD IT BE USED: When needing advice on exporting Australian seafood.

AVAILABILITY: Contact Helen Barnard, Australian Wild Abalone™.

RELATED PROJECT: 2013/714

SAFEFISH AND TRADE



SELLFISH

MARKET DEVELOPMENT KITS

Seafood marketers kit

The kit includes a USB stick loaded with PowerPoint presentations from the Seafood CRC Cram Conference, the Super Seafood Book, How Brands Grow book, the New Product Development technical guide, and back copies of the SeaFOOD Magazine.

WHO IS IT FOR: Seafood marketers and retailers.

WHEN WOULD IT BE USED: When developing and executing marketing strategies.

AVAILABILITY: Contact the FRDC.

RELATED PROJECT: 2013/705.01

Cobia market analysis

This report gives an overview of global consumption and production trends for Cobia, outlining figures for the major and minor producing and consuming markets as well as the emerging producers worldwide. It would be of use to Cobia marketers when developing an economic business case for Cobia farming and marketing.

WHO IS IT FOR: People interested in the market for Cobia.

WHEN WOULD IT BE USED: When developing an economic business case for Cobia farming and marketing.

AVAILABILITY: Seafood CRC consumer and market research website.

RELATED PROJECT: 2010/715

Report and factsheet on consumer perceptions when buying prawns in Australia

This marketing report focuses on consumer perceptions and preferences when buying prawns, including a better understanding of the impact that flesh colour has on consumers' willingness to buy prawns and a determination of consumer preferences in regard to product form (fresh/frozen, peeled/whole, cooked/green) and packaging, including pack size and style. A factsheet provides the key messages and findings from the report.

WHO IS IT FOR: Prawn fishermen, farmers and marketers.

WHEN WOULD IT BE USED: When developing a company based marketing strategy.

AVAILABILITY: Seafood CRC consumer and market research website.

RELATED PROJECT: 2009/742

Barramundi branding and marketing

Consumer knowledge and awareness strategies for the Australian Farmed Barramundi Industry for the domestic market, that enable the Australian farmed product to be differentiated from its competitors and to deliver on consumer expectations for quality and price. As a result of this project, a number of products were realised.

- Desktop research - an overview of the Australian Barramundi market
- Value chain study of the farmed Barramundi industry in Australia
- Sensory evaluation which highlighted a lack of consistent product quality
- Consumer study to explore consumer needs, perceptions and intended behaviour towards Australian farmed Barramundi
- Chef interviews
- Branding experiment in fishmongers
- Recipe cards
- Chef advertising campaign
- National marketing strategy development: a whole of industry marketing program for the Australian Farmed Barramundi Industry.

WHO IS IT FOR: Australian Barramundi Farmers Association members.

WHEN WOULD IT BE USED: When deciding on strategies for marketing Barramundi.

AVAILABILITY: Australian Barramundi Farmers Association.

RELATED PROJECT: 2008/794.20

Southern Rocklobster supply chain resources

A number of resources for exporters and their supply chain partners have been produced:

- Food service manual for chefs including information on sustainability, storage, and handling
- Methods for cooking techniques including pan frying, roasting, steaming, grilling and sous vide
- Recipe cards for chefs including Southern Rocklobster sashimi, bisque, stocks, steaks and ravioli.

WHO IS IT FOR: Exporters and supply chain partners.

WHEN WOULD IT BE USED: When marketing Southern Rocklobster.

AVAILABILITY: Southern Rocklobster Ltd.

RELATED PROJECT: 2007/704

Australian Wild Abalone™ program

Based on extensive market research in China Abalone Council Australia Ltd (ACA) and the Abalone Association of Australasia Inc. (AAA) have developed the Australian Wild Abalone™ (AWA) certification mark and market education program. The aim of the AWA ™ Certification Mark and Market Education Program is to differentiate and create preference for Australian wild harvested Abalone.

The AWA™ team are working on helping the entire supply chain to build confidence with the Australian Wild Abalone™ product, so they feel secure that they are purchasing a premium quality product - a product harvested sustainably by experienced divers from the cool clean waters of southern Australia, processed and packaged according to the most stringent Quality Assurance and Food Safety Guidelines.

The brochure explains how the new certification system works, and also includes species and product information, harvesting background and nutritional facts.

Product cards for Blacklip, Greenlip, Brownlip and Roei Abalone include information on the harvest locations and habitats of each species.

WHO IS IT FOR: Australian Wild Abalone exporters.

WHEN WOULD IT BE USED: When exporting abalone to China.

AVAILABILITY: Australian Wild Abalone™.

RELATED PROJECT: 2013/714

SUPER SEAFOOD KITS

Super Seafood resources

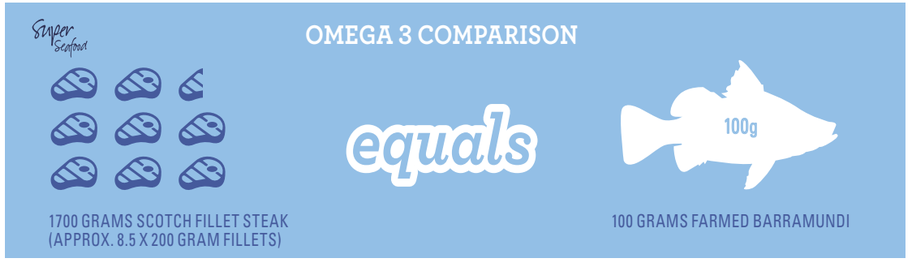
The results of comprehensive laboratory testing conducted on fresh, Australian wild and farmed seafood has been collated to produce a collection of downloadable resources for 20 species. These resources can be used to support claims based on nutrition, and to assist in preparation of nutrition information panels for labelling.

WHO IS IT FOR: Industry, marketers, processors, retailers and consumers.

WHEN WOULD IT BE USED: When preparing packaging labels, marketing collaterals and communicating with customers.

AVAILABILITY: Super Seafood website.

RELATED PROJECTS: 2008/905, 2008/720



"Bounty from the Sea" resources pack for schools and vocational training

Items in resource pack:

- Instructor Resource
- 'Bounty from the Sea' PowerPoint
- 'Bounty from the Sea' Handout
- Quick Seafood Quiz
- Quick Seafood Quiz Answer Sheet
- Student Task Handout
- Self Assessment Handout/ Peer Assessment Handout.

WHO IS IT FOR: Teachers and students.

WHEN WOULD IT BE USED: When educating children about the benefits of eating seafood.

AVAILABILITY: Super Seafood website.

RELATED PROJECT: 2008/720

KidZone website

KidZone is an interactive platform for children to learn about seafood and the health benefits of including it in your diet. Also available are support materials for teachers for use in conjunction with the resources in CESSH Kidzone. All these resources may be freely reproduced for use in the classroom.

WHO IS IT FOR: Teachers, primary students and retailers.

WHEN WOULD IT BE USED: When educating children about the benefits of eating seafood.

AVAILABILITY: Curtin University CESSH website.

RELATED PROJECT: 2008/720

High seafood diet for women of child bearing age

This factsheet contains results of a study conducted to determine the benefits of a high seafood diet in women of child bearing age.

WHO IS IT FOR: Women of child bearing age.

WHEN WOULD IT BE USED: For health management, especially if considering pregnancy in the future.

AVAILABILITY: Super Seafood website.

RELATED PROJECT: 2008/731

Seafood meal plan for pregnant women

This seafood meal plan will help pregnant women to maintain their health during pregnancy and help the neurological development of their baby.

WHO IS IT FOR: Pregnant women.

WHEN WOULD IT BE USED: When pregnant to increase intake of seafood.

AVAILABILITY: Super Seafood website.

RELATED PROJECT: 2008/720

Seafood and health factsheets

Factsheets on the ways in which seafood can be beneficial to people with the particular health conditions. The factsheets include information on how seafood can help the condition, how much is needed to stay healthy, which fish to choose as well as meal planners and recipes. Conditions covered include:

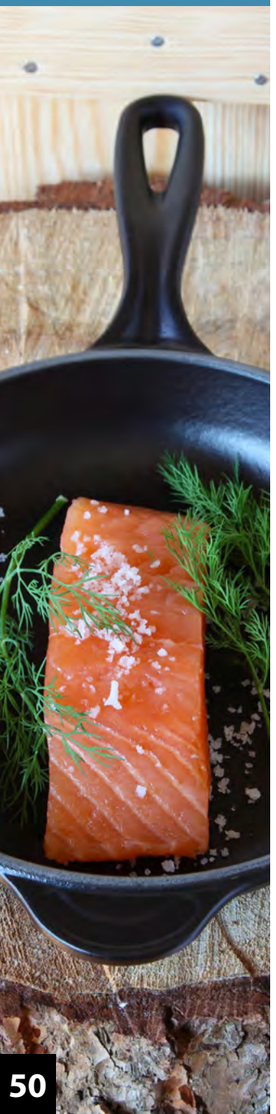
- Arthritis
- Cancer
- Coronary heart disease
- Diabetes
- Pregnancy
- Reducing inflammation.

WHO IS IT FOR: The general public.

WHEN WOULD IT BE USED: For general health.

AVAILABILITY: Super Seafood website.

RELATED PROJECT: 2008/720



A 14 day high seafood menu for the over 50's

A menu plan designed for the over 50's that incorporates at least four servings of Australian seafood per week.

WHO IS IT FOR: People over 50.

WHEN WOULD IT BE USED: For health management and disease prevention.

AVAILABILITY: Super Seafood website.

RELATED PROJECT: 2008/796

SeaFOOD magazine

AUSTRALIAN
sea FOOD MAGAZINE
Humble sardines get a makeover thanks to new product development
Proving that seafood is POSITIVELY NUTRITIOUS
Temperature management

The SeaFOOD Magazine is primarily designed as a source of technical information resulting from Seafood CRC research projects.

WHO IS IT FOR: Marketers, retailers and processors.

WHEN WOULD IT BE USED: To read about recent seafood research findings, news and issues.

AVAILABILITY: Contact the FRDC or Seafood CRC website.

Health communication trade stand backdrop and banner

A stand-alone trade display backdrop and banner for the trade stand is available. The backdrop for the display measures 245cm by 540 cm, and a second display measures 245cm by 235cm. There is also a double-sided free standing banner advertising the Seafood CRC and Kidzone, measuring 80cm by 215cm (interactive education areas).

WHO IS IT FOR: Those who want to promote seafood and health in a trade show environment.

WHEN WOULD IT BE USED: On an as needed basis.

AVAILABILITY: Contact the FRDC.

RELATED PROJECT: 2010/764

"FISH BITES" SERIES

What do Australians really think about throwing another shrimp on the barbie? Are Australians scared of seafood? The University of the Sunshine Coast brought together their considerable consumer research resulting in a fascinating series of short presentations called Fish Bites.

The aim of the Fish Bite Series is to disseminate the findings of extensive consumer research, to develop a richer understanding of Australian consumers' attitudes and behaviours with respect to seafood consumption and to discuss practical implications arising from the research findings.

WHO IS IT FOR: People delivering training courses (University, Vocational Education and Training providers and Registered Training Organisations) and seafood marketers and retailers.

WHEN WOULD IT BE USED: When developing, designing or delivering training courses related to Australian seafood marketing or developing market strategies and activities.

AVAILABILITY: Seafood CRC consumer and marketing research website.

RELATED PROJECTS: 2008/710, 2010/769

Australian Council of Prawn Fisheries prawn research coordination and extension strategy

This project was to support the ACPF to coordinate research and identify opportunities for extension and utilisation. As a result, this "overarching umbrella" project produced:

- Compositional profiles, info-graphics and nutrition resources for different prawn species which can be used to provide nutritional information and support trade and market access negotiations
- Bio-economic models that can be used to predict the economic consequences of alternative fisheries management regimes
- A unified national prawn category marketing strategy : "Love Australian Prawns"
- Branding of regional prawn fisheries under the "Love Australian Prawns" banner
- Development of individual websites and social media platforms for several regional prawn fisheries
- A standard method of measuring prawn quality through the supply chain
- Standard supply chain training resources
- Improved product traceability methods

WHO IS IT FOR: The whole prawn industry, retail outlets stocking Australian prawns and those running quality assurance programs

WHEN WOULD IT BE USED: When providing information and undertaking marketing of prawns to both new market stakeholders and consumers.

AVAILABILITY: Australian Council of Prawn Fisheries

RELATED PROJECT: 2012/729

A short primer on standards: A guide to understanding the FAO code of conduct for responsible fisheries.

A short primer on standards
Are standards different from codes and guidelines?
Policy Solutions (Regulatory Options)
2 - 5 years

The FAO Code of Conduct for Responsible Fisheries and FAO Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries represent internationally negotiated documents that represent consensus on the criteria for responsibly managed fisheries. These 'tools' form the basis of a number of private standards that are used for the certification of fisheries; including Marine Stewardship Council, Alaska FAO Based Responsible Fisheries Management (RFM) Certification and Iceland Responsible Fisheries Management Certification. This project investigated the feasibility of an FAO Based RFM Certification for Australia. A 'Short Primer on Standards' was produced to provide a jargon buster for readers who are less familiar with the terminology of accreditation, certification and standards found in the report.

WHO IS IT FOR: Fisheries interested in a RFM certification

WHEN WOULD IT BE USED: During RFM accreditation and certification to understand the language used in the process

AVAILABILITY: Contact the FRDC

RELATED PROJECT: 2012/746

Chilled pre-packaged seafood consumer research reports

These reports describe the retail seafood market and identifies specific insights for pre packed seafood that are not currently being used in the market; the product types most likely to succeed in this category; the positioning most likely to succeed with the consumer; and how this range should be located in the retail store.

Reports available:

- Project Transformation: A thorough understanding of consumer behaviour and requirements across the Chilled Pre-packaged Seafood category.
- Packaging concepts.
- Retail Transformation Project Standard Review - Comparison of the major standards dealing with Food Safety Management Systems.

WHO IS IT FOR: Companies wanting to produce pre-packaged chilled seafood.

WHEN WOULD IT BE USED: To determine capability for manufacturing pre-packaged chilled seafood, and when developing new prepackaged chilled seafood products to minimise risk of failure.

AVAILABILITY: Seafood CRC Consumer and Marketing Research website.

RELATED PROJECT: 2009/770

Quality index manual and app

The Quality Index Manual is a tool for evaluating remaining shelf life for chilled, whole seafood.

QI Schemes are currently available for:
– Atlantic Salmon (*Salmo salar*)
– Barramundi (*Lates calcarifer)*
– Black Tiger Prawns (*Penaeus monodon*)
– Goldband Snapper (*Pristopomoides multidens*)
– King Prawns (*Melicertus plebejus)*
– Pink Ling (*Genypterus blacodes)*
– Redthroat Emperor (*Lethrinus miniatus)*
– Saddletail Snapper (*Lutjanus malabaricus*)
– Scaly Mackerel (*Sardinella lemuru*)
– Sea Mullet (*Mugil cephalus*)
– Silver Warehou (*Seriolella punctata*)
– Snapper (*Pagrus auratus*)
– Tiger Flathead (*Neoplatycephalus richardsoni)*
– Yellowtail Kingfish (*Seriola lalandi).*

The later goal of this project was to provide the QI method to participants in a format that was most readily applicable in any environment at any point along the supply chain. To achieve this, an Australian Seafood Quality Index App was created suitable for use on multiple devices. Industry comment on the app was very positive. In one supply chain, the QA Manager has immediately purchased iPads for the QA staff ready to download the finalised version of the app!

WHO IS IT FOR: People who buy whole fish through any step of the supply chain.

WHEN WOULD IT BE USED: When receiving or agreeing to buy chilled whole fish to get substantive confidence that the product is safe and would last as long as needed and to save money and reduce waste.

AVAILABILITY: Sydney Fish Markets Pty Ltd. and the Apple and Android app stores

RELATED PROJECTS: 2003/237 and 2013/758

Improved retailing concept for Oysters

Previous CRC research has highlighted opportunities to provide education to consumers to address some of the issues that currently prevent purchase. Specifically, information where the oysters are from (provenance), how to prepare them (including recipes/accompaniments), how to store them, plus creating some excitement / visibility of the products via in-store theatre (shucking) are all areas that would appear likely to stimulate demand. This project aimed to 1) Increase the sales of fresh oysters in six trial fishmongers via improved merchandising (retail presentation and in-store theatre) and information at point of sale and 2) Determine the value proposition, including benefit cost considerations related to expansion of the concepts to more fishmongers.

Key project outputs include:

- Photos from three new photo shoots for use in posters and information books
- Recipe and information brochures
- Packaging stickers
- Improved consumer information book
- Improved tray fronts for oyster sale retail display

WHO IS IT FOR: Retailers and producers looking to expand the market penetration of Australian oysters.

WHEN WOULD IT BE USED: During every day retail displays and marketing of oysters

AVAILABILITY: Oysters Australia

RELATED PROJECT: 2012/740

A guide for use by the shark and other fisheries for preparation of information for consumers

This project aimed to develop a 'how to' guide for small to medium businesses to assist in navigating the Food Standards Code as well as a simple promotional brochure framework, using Augusta Wild Caught Fisheries as a case study to illustrate how it could be used in practice. The project produced:

1) A user-friendly guide (Navigating the Food Standards Code: A guide for small to medium enterprises) to help members of the Australian seafood industry negotiate their way through legislation governing food labelling and promotion of products within the Food Standards Code.

2) A template for a promotional brochure to assist small to medium seafood businesses to better promote their products.

3) A power point presentation to support the promotion of the guide to industry.

WHO IS IT FOR: Small to medium businesses working under the Food Standards Code

WHEN WOULD IT BE USED: When producing and communicating operating procedures that are required to be compliant with the food standards code

AVAILABILITY: West Australian Fishing Industry Council and Curtin University

RELATED PROJECT: 2014/705

OzSeaValue

Refrigeration index for Australian oysters

Temperature is a key factor for controlling *Vibrio parahaemolyticus* growth in oysters. The refrigeration index estimates the growth and survival of *V. parahaemolyticus* and total viable count (TVC) bacteria in Pacific Oysters as well as based on temperatures experienced by the oysters during transport. It helps oyster companies design and monitor supply chains to maximise both oyster safety and quality. The Index can also be used to predict shelf life and potential product loss and to analyse the performance of the supply chain.

WHO IS IT FOR: Oyster producers and customers, food safety managers and regulators.

WHEN WOULD IT BE USED: On receipt of oysters and in concert with temperature data loggers.

AVAILABILITY: SafeFish website.

RELATED PROJECT: 2007/719

Farmed prawn industry specific benchmarking software tool

The Australian Prawn Farmers Association prawn benchmarking software is a computerised software tool that allows farmers to enter information and the software tells them how their farms compares against others. Growers will then have the ability to identify strategies that they can introduce to their own farming operations to improve their business profitability and improve their bottom line.

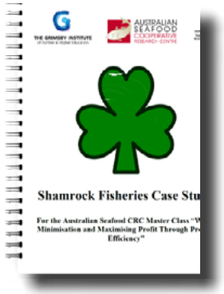
WHO IS IT FOR: Prawn farmers

WHEN WOULD IT BE USED: To compare productivity on a range of areas against others to identify areas and opportunities to improve business performance.

AVAILABILITY: Contact the Seafood CRC.

RELATED PROJECT: 2007/716

Seafood waste and processing efficiency masterclass course notes and case studies



The case study centres around the Irish-based Shamrock Fisheries Ltd Company, which produces and packs around 3500 packs of 100g salmon pouches each day. Activities included defining the process to produce the finished packs, identifying waste categories, preparing process maps and discussing pathways for improvements.

The PowerPoint slides and case studies are available for download.

WHO IS IT FOR: Seafood processors.

WHEN WOULD IT BE USED: When reviewing processes or establishing new ones.

AVAILABILITY: Seafood CRC training and education website.

RELATED PROJECT: 2010/710

Mincing guide: Microbial and oxidative issues in diced and minced seafood

This guide describes the factors to be considered when using minced seafood, including shelf-life, refrigerated storage, and the impact that the addition of herbs has to the quality and shelf life of the product.

WHO IS IT FOR: Seafood businesses developing new products involving minced seafood.

WHEN WOULD IT BE USED: When considering developing a new product or improving an existing product (troubleshooting product), to ensure that products developed are safe, suitable and saleable.

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2007/703

Western Rocklobster automated processing guide

This guide focuses on the automation of three areas of lobster processing:

1. Washing the cook residue off boiled lobsters.
2. Wrapping of Western Rocklobster tails.
3. Colour/vision grading.

WHO IS IT FOR: Rocklobster processors.

WHEN WOULD IT BE USED: When deciding on investing in automation equipment.

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2008/910

Reference database for YTK flesh quality

A reference database for a wide range of haematological, biochemical and flesh composition parameters has been established from wild YTK that were of a similar size range to harvested farmed fish. This will help identify 'normal' from 'abnormal' results from farmed fish, and give some direction for further changes to aquaculture diets and health management to improve fish health and productivity in culture.

WHO IS IT FOR: YTK growers.

WHEN WOULD IT BE USED: In the development of harvest strategies for YTK and analysis of harvest strategies.

AVAILABILITY: From the FRDC.

RELATED PROJECT: 2010/778

Best practice handling and preparation brochure and poster for prawn point of sale

The Australian wild-caught prawn industry identified the need for improved product handling and quality assurance practices. Through a CRC project, brochures and posters were developed for prawn retailers at the point of sale to address product handling and quality assurance practices.

WHO IS IT FOR: Prawn retailers and consumers.

WHEN WOULD IT BE USED: When educating consumers about prawns.

AVAILABILITY: Contact Curtin University (CESSH)

RELATED PROJECT: 2011/747

Packaging training

A series of workshops were held to facilitate an understanding of latest technology and trends in seafood packaging. Workshops were held in multiple locations across Australia, with presentations from industry experts with a range of skills in packaging technologies. Presentations available include:

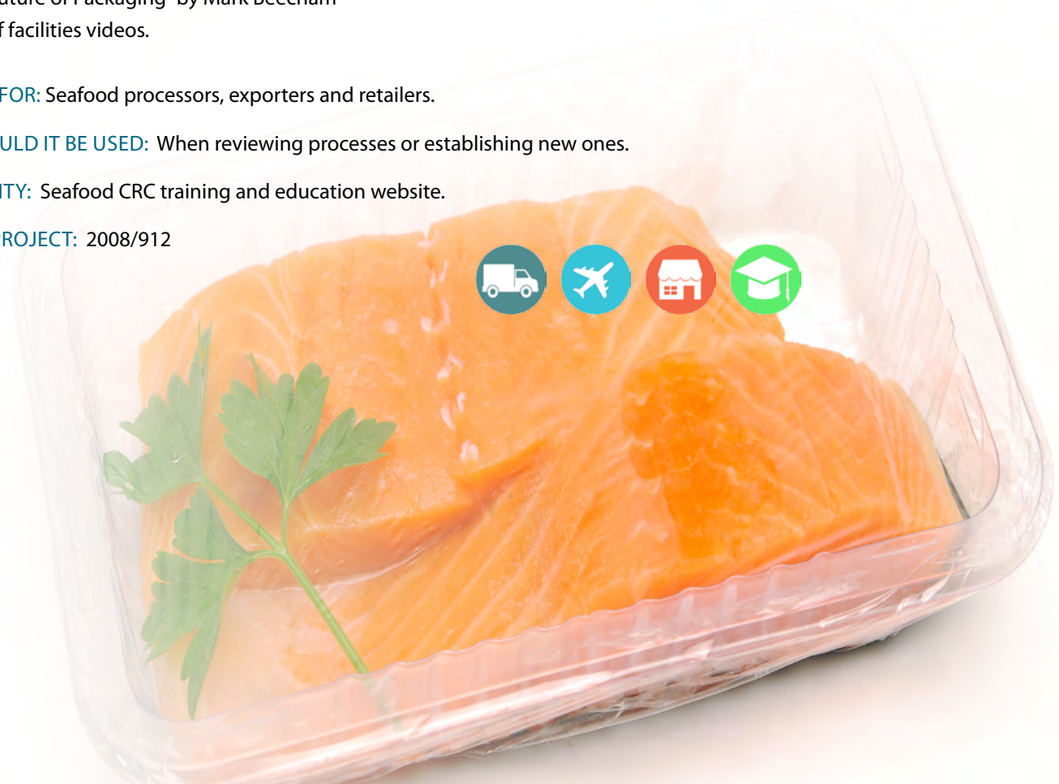
- "Recent trends" by Andrew Barber
- "Developments: An International Perspective" by Bernard Leveua
- "Extending Shelf life" by Professor Harry Lovell
- "The Future of Packaging" by Mark Beecham
- Tour of facilities videos.

WHO IS IT FOR: Seafood processors, exporters and retailers.

WHEN WOULD IT BE USED: When reviewing processes or establishing new ones.

AVAILABILITY: Seafood CRC training and education website.

RELATED PROJECT: 2008/912



Accelerated product development guide and template kit

This kit contains the templates and forms needed to undertake an innovative seafood product development and marketing methodology, based on the stagegate idea to launch process. The method involves a short, intense period of product "ideation" and development before assessing the production and market feasibility of the agreed product concept following small scale production.

WHO IS IT FOR: Seafood businesses involved in developing new products or wishing to move into that space.

WHEN WOULD IT BE USED: Prior to embarking on a new product development project to minimise risks in developing and launching new products.

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2010/706

Abbacus Fisheries Crab Cakes

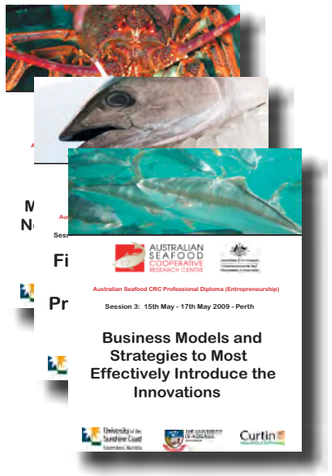
A key product from the accelerated product development project

ABSEA

Seafood CRC professional diploma - Entrepreneurship and innovation program course notes

The Seafood Success/Seafood CRC Management Development Program was designed to address the fundamentals of marketing, production, and people management that are critical to business operations and how these are incorporated into a business plan.

Course notes are available (Seafood Success - eight weekends per year; Seafood CRC Management Development Program - four day course).


AUSTRALIAN SEAFOOD COOPERATIVE RESEARCH CENTRE
Australian Seafood CRC Professional Diploma (Entrepreneurship)
Session 3: 15th May - 17th May 2009 - Perth
Business Models and Strategies to Most Effectively Introduce the Innovations
Curtin

WHO IS IT FOR: Seafood marketers and companies.

WHEN WOULD IT BE USED: When developing a marketing plan.

AVAILABILITY: Contact the Seafood CRC.

RELATED PROJECT: 2009/702

The ALife Project videos and factsheets - Promoting the Australian seafood industry as a career path for Generation Y

The ALife project teams with Australian celebrities and aims to replace the hard copy Careers Guide book given to year 11 secondary students nationally.

Key seafood careers video profiles available:

- Professional Fisherman
- Aquaculture Farmhand
- Aquaculture Scientist
- Dive Team Leader
- Oyster Farmer
- Fish Market Quality Assurance Officer.

Factsheets avaliable:

- Seafood Processor
- Retail Revolutionary
- Seafood Police
- Fantastic Fishing.

WHO IS IT FOR: School leavers in Australia.

WHEN WOULD IT BE USED: When deciding on future career paths.

AVAILABILITY: Seafood CRC Training and Education website.

RELATED PROJECT: 2008/732

The Seafood Industry Partners Project program course learning guides

Connecting early career researchers with the Australian seafood industry through meaningful coaching partnerships

The Seafood Industry Partners Project (or SIPP) aims to engage research students and post doctoral research scientists in a program that enhances their pathway into further seafood research or industry careers.

Course notes, workbooks and training activities were produced around this program which are available.

WHO IS IT FOR: High school students (years 11-12), undergraduate or post graduate students.

WHEN WOULD IT BE USED: For gaining greater awareness of the different facets of the seafood industry and seafood related training activities through topics such as business and commercial cookery.

AVAILABILITY: Seafood CRC website.

RELATED PROJECTS: 2011/737, 2012/730

High school engagement initiative - video case studies and seafood learning facility schematic plans

In 2010, the Seafood CRC implemented a high school engagement initiative in the Eyre Peninsula area. A video describing what was found in this study is available to view as well as case studies on successful schools implementing seafood into their curriculum. Schematic plans and budgets are also included for those schools wishing to implement a seafood teaching farm on site.

WHO IS IT FOR: High school students (years 8-12) and for high school teachers

WHEN WOULD IT BE USED: For teaching students about seafood and the supply chain and a resource to be used when setting up a school based aquaculture and seafood learning facility.

AVAILABILITY: Seafood CRC Training and Education website.

RELATED PROJECT: 2010/739

Prawn farming DVD

This DVD showcases the Australian prawn farming industry, showing how prawns are grown and harvested.

WHO IS IT FOR: Prawn retailers and secondary teaching.

WHEN WOULD IT BE USED: To communicate and educate people on how prawns are farmed in Australia.

AVAILABILITY: Contact the Seafood CRC.

RELATED PROJECT: 2010/746

Supply chain training videos

A series of You Tube videos which show industry how to perform supply chain monitoring and analyses themselves. Since the introduction of simple, inexpensive temperature loggers and the software to program the loggers, producers can download temperature profiles and undertake their own quality index assessments. In addition to temperature assessments producers can also assess drip loss with a standard set of industrial scales.

The training videos available to download include:

- Chain management
- Data loggers
- Drip loss
- Economics
- Microbiology
- Quality Index
- Testimonials

WHO IS IT FOR: Seafood producers and processors.

WHEN WOULD IT BE USED: At any stage of the supply chain.

AVAILABILITY: Seafood CRC training and education website.

RELATED PROJECT: 2009/709

Updates to the National Seafood Industry Training Package

All relevant CRC research projects were reviewed for skills and knowledge areas that were suitable for inclusion in the National Seafood Industry Training Package. A skill and knowledge map of CRC projects and 9 new units of competency were developed and 12 existing units of competency were updated as a result.

WHO IS IT FOR: Anybody pursuing a formal seafood industry qualification through the national seafood industry training package, for registered training organisations registered to teach the relevant units and for the Agri-Foods Skills Industry Council for their training continuous improvement processes.

WHEN WOULD IT BE USED: When undergoing industry-based training and education

AVAILABILITY: www.training.gov.au website

RELATED PROJECT: 2010/779

A (SEA)Food marketing course

The goal of this project was to develop one postgraduate course in food marketing. However during the university accreditation process, a demand for an undergraduate version of the course was also identified, leading to the development of a second undergraduate level food marketing course. In line with accreditation processes, a business case was developed based on potential demand and current competitive offering.

The postgraduate course MKG721 Food Marketing was offered for the first time in Trimester 2 2014. The student evaluation of the course overall was 5 out of 5, with all subcomponents (e.g. feedback, tasks, structure) rated between 4.6 and 5 out of 5. The undergraduate course MKG212 Food Marketing, will start to be offered in 2015.

A non-accredited version of the course is also available to industry wanting to increase their knowledge about food marketing through the FRDC's FishFiles website.

WHO IS IT FOR: Anyone looking for formal accredited education or to expand their knowledge about food marketing with a seafood focus.

WHEN WOULD IT BE USED: While developing a food marketing strategy.

AVAILABILITY: The University of the Sunshine Coast (for the post-graduate and undergraduate courses). Visit www.fishfiles.com.au for the industry non-accredited version.

RELATED PROJECT: 2013/717

Module 1 – The Food Industry: Globally and in Australia
Module 2 – Developing Strategies in the Food Industry: Challenges & Opportunities
Module 3 – Supply Chain Development and Management: Managing the Chain

EXTENSION & COMMERCIALISATION

Safe packaged seafood guide

This guide assists seafood businesses to produce safe and wholesome products that offer a return on investment. It is an easy to read summary of SafeFish technical documents.

WHO IS IT FOR: Seafood processors, packagers and retailers.

WHEN WOULD IT BE USED: To determine specific testing requirements and sampling regimes for products. and when value-adding and packaging seafood for sale.

AVAILABILITY: SafeFish website.

RELATED PROJECTS: 2008/729 and 2011/739

SAFE
PACKAGED
SEAFOOD
A GUIDE TO IDENTIFYING FOOD SAFETY HAZARDS AND DETERMINING THE SHELF–LIFE OF PACKAGED SEAFOOD PRODUCTS

REGULATORY REQUIREMENTS
What are the regulated hazards for finfish?
PROCESSING AND PACKAGING
Why use modified atmosphere packaging?
Are there any quality issues that can arise from MAP?
Are there any increased food safety risks with MAP?
Why use smoking?
Are there any increased food safety risks from smoking?
Fast Facts

Seafood industry TV News videos

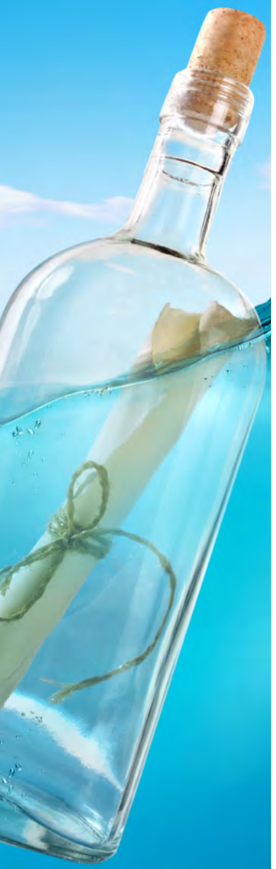
A CRC project explored new ways to effectively communicate with the seafood industry using Oysters Australia industry participants in the pilot study. The trial sent a news-style two minute video to participants.

WHO IS IT FOR: Oyster farmers.

WHEN WOULD IT BE USED: When wanting to find out about the results of CRC oyster research.

AVAILABILITY: Seafood CRC website.

RELATED PROJECT: 2009/747



Guideline report for quality and safety assessment of novel seafood products

The technical reference manual includes the following topics:

- Food safety hazards identified at all steps of the supply chain from pre- to post-harvest including processing of each key species (i.e. molluscs, crustaceans and finfish) and product formats (i.e. modified atmosphere packaged, cold smoked, hot smoked and canned).
- Information and relevant links on domestic and international food safety regulatory requirements of seafood products
- Seafood packaging and processing options that are commonly utilised in Australia
- Potential testing methods for food safety hazards
- Quality and freshness attributes of seafood products
- Indicators of freshness attributes and testing methods
- Shelf-life determination

The technical reference manual contains fact sheets for 16 food safety hazards.

WHO IS IT FOR: Seafood processors, packagers and retailers.

WHEN WOULD IT BE USED: When value-adding and packaging seafood for sale.

AVAILABILITY: Seafood CRC website or from SARDI.

RELATED PROJECT: 2011/739

ORGANISATION CONTACTS

Abacus Fisheries
PO BOX 626 Carnarvon, WA
Tel: (08) 9941 2030
Web: www.abacusfisheries.com.au

Australian Barramundi Farmers Association (ABFA)
PO Box 26, Cooroy, QLD 4563
Tel: 0401 692601
Web: www.abfa.org.au

Australian Prawn Farmers Association
PO Box 2202, Woorim, QLD 4507
Tel: (07) 3400 2002
Web: www.apfa.com.au

Australian Seafood Industries
PO Box 149, Glenorchy, TAS 7010
Tel: (03) 6274 1797

Australian Wild Abalone™
262 Argyle Street, Hobart, TAS 7000
Tel: (03) 62 311955
Web: australianwildabalone.com.au

Clean Seas Tuna Ltd
PO Box 159, Port Lincoln, SA 5606
Tel: 08 8621 2900
Web: www.cleanseas.com.au

CSIRO
GPO Box 2583, Brisbane, QLD 4001
Tel: 13300 363 400
Web: www.csiro.au

Curtin University
GPO Box U1987, Perth, WA 6845
Tel: (08) 9266 9266
Web: www.curtin.edu.au

Darwin Aquaculture Centre
GPO Box 3000, Darwin, NT 0801
Tel: (08) 8999 2144
Web: www.nt.gov.au/d/Fisheries

Department of Agriculture, Fisheries and Forestry Quuensland (QDAFF)
PO Box 156, Aracherfield, QLD 4108
Tel: 13 25 23
Web: www.daff.qld.gov.au

Department of Primary Industries NSW, Port Stephens Fisheries Centre
Locked Bag 1, Nelson Bay, NSW 2315
Tel: 1300 550 474
Web: www.dpi.nsw.gov.au

Department of Fisheries, WA
Locked Bag 39, Cloisters Square, WA 6850
Tel: (08) 9482 7333
Web: www.fisheries.wa.gov.au

Flinders University
GPO Box 2100, Adelaide, SA 5001
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Web: www.flinders.edu.au

FRDC
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Web: www.frdc.com.au

James Cook University
James Cook University, Townsville QLD 4811
Tel: (07) 4781 4111
Web: www.jcu.edu.au

Marine Culture
GPO Box 1477, Hobart, TAS 7001
Tel: (03) 6236 3000
Web: www.marineculture.com.au

Rural Directions
PO Box 646, Clare, SA 5453
Tel: (08) 8841 4500
Web: www.ruraldirections.com

SafeFish
Web: www.safefish.com.au

Seafarm
Tel: (07) 4066 8084

Seafood CRC
Box 26, Mark Oliphant Building, Laffer Drive, Bedford Park, Adelaide, SA 5042
Tel: (08) 8201 7650
Web: www.seafoodcrc.com

Seafood CRC Consumer Research and Marketing
www.seafoodconsumerresearch.com.au

Seafood CRC Training and Education
www.seafoodcrctraining.com.au

Select Oyster Company
Web: www.selectoysterco.com.au

Southern Rocklobster Ltd
Level 1, 16 Unley Road, Unley, SA 5061
Tel: (08) 8357 7569
Web: www.southernrocklobster.com

Sunshine Coast TAFE
Tel: (07) 5457 1000
Web: www.sunshinecoast.tafe.qld.gov.au

Super Seafood
www.superseafood.com.au

Sydney Fish Market
Locked Bag 247, Bank Street, Pyrmont, NSW 2009
Tel: (02) 9004 1100
Web: www.sydneyfishmarket.com.au

Tasmanian Seafoods
Locked Bag 4, Maroochydore DC, QLD 4558
Tel: (07) 5430 1234
Web: www.usc.edu.au

University of the Sunshine Coast
Locked Bag 4, Maroochydore DC, QLD 4558
Tel: (07) 5430 1234
Web: www.usc.edu.au

University of Tasmania
Private Bag 01, Hobart, TAS 7001
Tel: (03) 6226 2999
Web: www.utas.edu.au

WAFIC
PO Box 1605, Fremantle, WA 6160
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Web: www.wafic.org.au

AUSTRALIAN SEAFOOD CRC

www.seafoodcrc.com

2007-2015

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Australian Government
Department of Industry and Science

Business
Cooperative Research
Centres Programme

FRDC
FISHERIES RESEARCH &
DEVELOPMENT CORPORATION